PART 11

PARTICULAR MECHANICAL REQUIREMENTS FOR TTP

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PART 11

PARTICULAR MECHANICAL REQUIREMENTS FOR MAJOR MECHANICAL EQUIPMENTS FOR TTP

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PART 11

MAJOR MCHANICAL EQUIPMENTS FOR 10 MLD TTP at YELAHANKA

Table 11- 1: MAJOR MECHANICAL EQUIPMENTS FOR UP GRADATION OF 10MLD TTP AT YELAHANKA

Note: The Bidder at his own responsibility and risk is encouraged to visit and examine the Site of Works and its surroundings and obtain all information that may be necessary for preparing the Bid and entering into a contract for construction of the Works.

Sl. No.	Item	Type	Unit Process / Location	Minimum Number of Units				Minimum Installed Capacity per Unit		Minimum Requirements	Electrical Drive Type (CS/VFD)	Service (C/I)	No of Units Connected to TTP Generator
				Working	Stand by	Store	Total	Capacity	UOM				
A	**RSPS Screens & Balancing tanks**												
1	Mechanical multi rake bar screen	Mechanical Bar screen	TSPS	1	0	0	1	-	-	To suit existing channel dimension at site MOC: SS316,Bar spacing : 20mm, bar thickness 10mm. Bar width:50mm	CS	C	1
2	Manual Bar Screen	Bar Screen	TSPS	1	0	0	1			To suit existing structure at site MOC: SS316, Barspacing:20 to 25mm bar thickness 10mm. bar	-	-	-

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				Working	Stand by	Store	Total	Capacity	UOM				
										width:50mm Shall be supplied with cleaning rakes SS304			
3	Belt Conveyor for Mechanical bar screens	Belt	TSPS	1	-	-	1	-	-	Min 600mm width, (Length of belt conveyor shall be as per requirement at site condition)	CS	C	1
4	Screen Container	Covered Hydraulic Tractor Trailer	TSPS	1	1	-	2	2	m^3				
5	Portable submersible pump for grit removal	Screen downstream channel	TSPS	1	1	-	2	-	-		CS	I	1
6	Submersible Mixers	-	Balancing Tank	4	0	0	4	-	-	7.5 HP Mixing energy : 10w/m^3	CS	C	4

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				Working	Stand by	Store	Total	Capacity	UOM				
										Lifting crane for mixers shall be supplied			
7	Monorail Chain Pulley Block with Travelling trolley	Manual Hoist	Screen channel near grit pit	1	0	0	1	0.5	MT	MoC: SS316	-	-	-
B	**Raw water Pumping Station**												
1	Raw Sewage Pumps	Submersible	TSPS	2	1	0	3	225	m^3/hr	Tentative head 15mWC	VFD	C	2
2	Monorail Chain Pulley Block with Travelling trolley	Manual	TSPS	3	0	0	3	1	MT	MoC: SS316	-	-	-

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				Working	Stand by	Store	Total	Capacity	UOM				
C	**PTU Screen System**												
1	Manual Fine Screen	Screen	PTU	1	0	0	1	450	m³/hr	MOC: SS316, Bar Spacing-10mm, Cleaning rake shall be SS304, bar thk: 10mm,bar width:50mm			
2	Mechanical Multi rake Fine screen	screen	PTU	2	0	0	2	450	m³/hr	MOC : SS316, Bar spacing : 6mm, Bar thickness : 8 to 10mm Bar width:50mm (To suit existing channel dimension at site)	CS	C	2

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Sl. No.	Item	Type	Unit Process / Location	Minimum Number of Units				Minimum Installed Capacity per Unit		Minimum Requirements	Electrical Drive Type (CS/VFD)	Service (C/I)	No of Units Connected to TTP Generator
				Working	Stand by	Store	Total	Capacity	UOM				
3	Screw conveyor or Belt conveyor	Conveyor	PTU	1	0	0	1			To Suit existing plant condition (Existing plant has Screw conveyor, contractor to evaluate as per exiting site condition and supply screw or belt conveyor which best suits the supplied mechanical fine screens.	CS	C	1
4	Screen Container		PTU	1	0	0	1	2	m^3	MOC: MS hot dip galvanised	-	-	-
D	**Grit and Grease Tank unit**												

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				Working	Stand by	Store	Total	Capacity	UOM				
1	Grit and grease Removal mechanism	Circular	Grit Removal Unit	2	0	0	2	*	-	*Dimensions of clarifier Shall be as existing at site. MOC : wetted parts : SS316 Non wetted parts : MS hot dip galvanized	CS	C	2
2	Submerged Aerator (turbine)	Submerged	Grit Removal Unit	2	0	0	2	-	-	MOC : SS316	CS	C	2
3	Portable Grease Container and grit container (trolley type)	Portable trolley type	PTU	2	0	0	2	2	m^3	MOC: MS Hot dip galvanized	-	-	-
4	Monorail Chain pulley with travelling trolley	Travelling trolley	Grit Removal Unit	2	0	0	2	1	MT	MoC: SS316	-	-	-

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				Working	Stand by	Store	Total	Capacity	UOM				
E	**Primary settler unit**												
1	Pre settler Mechanism (Primary Clarifier) with Scum removal system	Peripheral driven as per existing site condition	Pre settler (primary clarifier)	2	0	0	2	*		* Dimensions of clarifier Shall be as existing at site. (Dia : 13.85m) MOC: Mainly MS Hot dip galvanized. See part 8	CS	C	2
2	Submersible Sludge Pumps	Submersible	Primary Sludge Pumping station	1	1	0	2	40	m^3/hr		CS	I	1

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				Working	Stand by	Store	Total	Capacity	UOM				
3	Monorail Chain Pulley block with travelling trolley	Mechanical	Primary Sludge Pumping station	1	0	0	1	1	MT	MoC: SS316	-	-	-
F	**Biological Treatment unit**												
1	Anoxic tank Mixers	Mixers	Anoxic tank	2	2	-	4	Mixing energy : 10 w/m^3,		MOC: SS316L. Lifting crane for mixers shall be supplied	CS	C	2
2	Integrated Film Activated Sludge (IFAS) Media	-	Aeration Tank	LS	0	5%	LS			As per part 5 requirement	-	-	-

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				Working	Stand by	Store	Total	Capacity	UOM				
3	Diffusers	-	Aeration tank	LS	0	5%	LS	-	-	As per part 5 requirement Membrane materials shall be PU (Poly urethane)	-	-	-
4	Process Air Blower	Tri lobe	Air blower Building	2	1	0	3	7000	m^3/hr	Head : 0.8 bar(g) Air blowers shall be designed with atleast +10% additional capacity more than process requirement	VFD	C	2
5	Electric Operated Trolley (EOT) crane for Air blower room	Electric	Air blower room	1	0	0	1	3	MT	Capacity shall be Suitable to handle Air blowers	CS	I	1
6	MLR Pump (Internal Recirculation Pump)	Submersible/ tube installed	-	2	2	0	4	210	m^3/hr	As per part 5 requirement Pump efficiency shall be 70%	VFD	C	2

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Sl. No.	Item	Type	Unit Process / Location	Minimum Number of Units				Minimum Installed Capacity per Unit		Minimum Requirements	Electrical Drive Type (CS/VFD)	Service (C/I)	No of Units Connected to TTP Generator
				Working	Standby	Store	Total	Capacity	UOM				
										MOC: Impeller-Gr CF8M, shaft-A276 TYPE 410, supporting structure is SS316			
7	Electric Hoists with necessary monorails & Beams for Internal recycle pumps	Electric	Aeration Tank	2	0	0	2	1	MT	Suitable to handle MLR (internal recirculation) pumps	-	I	LS
G	**Secondary clarifier Unit**												
1	Secondary Clarifier Mechanism with Scum removal system	Peripheral driven	Secondary clarifier	2	0	0	2	*	-	*Dimensions of clarifier Shall be as existing at site (Dia.: 17m) MOC: Mainly MS Hot dip galvanized. See part 8	CS	C	I

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				Working	Stand by	Store	Total	Capacity	UOM				
2	Return Activated Sludge (RAS) Pumps	Submersible centrifugal pump	RAS Pumping station	2	1	0	3	225	m³/hr		VFD	C	2
3	Submerged Bio Excess Pump (WAS)	submersible	RAS Pumping station	1	1	0	2	25	m³/hr		As per process /part 5 requirement	I	1
4	Electric hoist with Monorail & I beam (RAS)	Electric Hoist	RAS Pumping station	1	0	0	1	1	MT		CS	I	1
5	Monorail Chain Pulley block with travelling trolley (WAS)	Manual Hoist	WAS Pumping station	1	0	0	1	0.5	MT	MoC: SS316	-	-	-
6	Exhaust Fans		RAS pump house	LS	-	-	LS	-		All existing fans shall be replaced	CS	C	LS

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				Working	Stand by	Store	Total	Capacity	UOM				
H	**TERITIARY TREATMENT**												
1	Air Blowers for Backwashing Filters	Blower	Tertiary treatments	1	1	0	2	572	Nm^3/hr	Pressure: 0.6bar(g)	VFD	C	1
2	Submersible Dirty wash pump	Submersible	Tertiary treatments	1	1	0	2	13	m^3/hr		CS	I	1
3	Air Compressor units along with all necessary accessories	Compressor	Tertiary Treatment	1	1	0	2	25	Nm^3/hr	$10kg/cm^2$	CS	C	1
4	Booster service water Pumps	Centrifugal/ Dry pit	Tertiary Treatment	2	1	0	3	30	m^3/hr		CS	I	1
5	Manual chain pulley hoist with travelling trolley	Manual Hoist	Dirty wash pumps	1	0	0	1	1	MT	MoC: SS316	-	-	-

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				Working	Stand by	Store	Total	Capacity	UOM				
I	**Back wash water Pump house**												
1	Backwash Pumps	Dry pit /Centrifugal	Backwash Pumping Station	1	1	0	2	343	m^3/hr	Tentative Head : 10 mWC	CS	I	1
2	Manual chain pulley hoist with travelling trolley	Manual Hoist	Backwash Pumping Station	1	0	0	1	1	MT	MoC: SS316	-	-	-
3	Dewatering Pump		Backwash Pumping Station	1	0	0	1	40	m^3/hr	-	-	I-	1-
4	Sampling pumps		Backwash Pumping Station`	1	0	0	1	As per requirement	m^3/hr	-	CS	I	1
5	Rapid gravity sand filters With all associated piping and valves		Sand Filter	4	0	0	4	*		*Dimensions shall be as existing at site	-	-	-

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				Working	Stand by	Store	Total	Capacity	UOM				
6	Under drain Nozzles for Rapid gravity sand filters		Sand Filter	LS	0	5%	LS	*		Dimensions & quantity shall be as existing at site	-	-	-
J	**Chemical and Sludge handling units**												
	Alum dosing system with all necessary accessories												
1	Alum tank Mixer			4	0	0	4		-	MOC: SS316			
2	Alum Dosing Pumps with all accessories			2	1	0	3	20	lph	Pressure at 2kg/cm² **All accessories as per part 8 for chemical feeding equipment**			

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				Working	Stand by	Store	Total	Capacity	UOM				
K	**Sludge Treatment Unit**												
1	Sludge Thickener Mechanism	Gravity sludge thickener	Sludge Thickener	1	0	0	1	*		Circular, Center Column supported Gravity thickener with central drive MOC: Hot dip galvanized (refer part 8) *Dimensions of thickener shall be as existing at site (dia. 13m)	CS	C	1
2	Centrifuge Feed Pump	Progressive cavity	Centrifuge building	1	1	0	2	5	m^3/hr	1.5 bar(g)	CS	C	1

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				Working	Stand by	Store	Total	Capacity	UOM				
3	Decanter Centrifuge	Solid bowl	Centrifuge building	1	1	0	2	5	m^3/hr	MOC : SS316	VFD	C	1
3	Screw conveyor for centrifuge	Screw	Centrifuge building	1	1	0	2	-	-	SS316	CS	C	1
4	Sludge Cake Pump	Forced speed screw	Centrifuge building	1	0	0	2	-	m^3/hr	16bar(g)(existing pump capacity)	VFD	C	1
5	Polymer Storage Tank/bins	Covered bins	Chemical building	1	0	0	1	-	-	GRP			
6	Poly Dosing pumps and its associated items	Positive displacement	Chemical building	1	1	0	2	370	lph	Pressure at $2kg/cm^2$ **All accessories as per part 8 for chemical feeding equipment**	-	C	1

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				Working	Stand by	Store	Total	Capacity	UOM				
7	Polymer Preparation (Batch) Tank	-	Dewatering Building	1	1	0	2	5.9*	m^3	*As per part 5 requirement			
8	Polymer Batch Tank Agitator	Turbine	Dewatering building	1	1	0	2			SS316	CS	I	1
9	Hoist for chemical handling			LS	0	0	LS	1	MT				
L	**Chlorination System**												
1	Chlorine tonners	Steel (SA 215 Gr 60)	Chlorination Building	2	6	1	9	900	Kgs				

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				Working	Stand by	Store	Total	Capacity	UOM				
2	Chlorinators	Vacuum type-Gas Feed	Chlorination Building	**1**	**1**	**0**	**2**	7kg/hr	**Nos.**	**Dosage rate : max 15 mg/l during peak**	CS	C	2
3	Chlorine Ejector	Inline vacuum induction	Chlorination Building	**1**	**1**	**0**	**2**		**Nos**				
4	Chlorination Booster pump	Pump	Chlorination building	1.00	1	0	2.00		Nos		-	C	1
5	Chlorine Cylinder Load Cell	Electronic type	Chlorination Building	LS	0	0	LS		LS				
6	Electric hoist with monorail and I beam with travelling trolley	Electric	Chlorination Building	1	0	0	1	2	MT		CS	I	1

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				Working	Stand by	Store	Total	Capacity	UOM				
7	Caustic Storage Tank	GRP	Adjacent to Chlorination Building	1	0	0	1	1	No.				
8	Emergency chlorine scrubber with all pumps (1W+1S), blowers (1W+1S) and other accessories for proper functioning of scrubber system	Caustic wet chemical scrubber – Automatic	Adjacent to Chlorination Building	**1**	**0**	**0**	**1**	**1**	**lot**				
9	Exhaust Fans	Duct Mounted Axial flow fan	Chlorination Building	**LS**	**0**	**0**	**LS**			As per requirement	CS	C	LS
10	Safety equipment including Air breathing apparatus complete with face masks, air tonners and all ancillary	-	Chlorination Building	**LS**	**0**	**0**	**LS**			Supply as per Part 8, Part 5 requirements			

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				Working	Stand by	Store	Total	Capacity	UOM				
	equipment, Safety Clothing, Potable air compressors, safety showers, eyewash, Emergency repair kit, Glass fronted PVC Cabinet, resuscitators, lifting beam, telephone and weighing scale.												
11	Chlorine dosing diffuser	diffuser	CCT	1.00		-	1.00	-	-	-			
M	**MISCELLANEOUS ITEMS**												
1	Air conditioning	Duct Mounted Air conditioning System	SCADA, Control room Building	2	0	0	2	2	Ton	-	CS	C	

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				Working	Stand by	Store	Total	Capacity	UOM				
2	Air conditioning	Split AC	Engineers room	1	-	-	1	As per requirement	ton				
3	Fire Extinguishers (ABC)			LS		-	LS	LS					
4	Fire Extinguishers (CO2)			LS	-		LS						
5	Exhaust fans	Flame Proof Exhaust Fan	STP	LS			LS*			*As per requirement during detail design engineering	CS	C	LS
6	Dewatering pump for STP		STP	1	0	0	1	10	m^3/hr		CS	C	-

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				Working	Stand by	Store	Total	Capacity	UOM				
	Mobile cranes		STP	LS	0	0	LS						
7	All the Stop logs in the Plant shall be replaced with Motorized Sluice gates			LS	-	-	LS			Dimensions as per site condition.			

Legend: CS = Constant Speed; VFD = Variable Frequency Drive; VS = Variable Speed; C= Continuous; I = Intermittent; UOM = Unit of Measurement, LS = Lump sum

Notes

1) It is bidders responsibility to visit the Plant and collect existing equipment details before submitting the Bid.
2) Sluice gates, Valves, pumping mains etc are not indicated in this equipment list as this is only a major mechanical equipment list. It is bidders responsibility to visit site and collect correct details before submitting the Bid. Valves and gates as necessary for complete plant and as elsewhere indicated in specifications shall be supplied.
3) Any Pump heads provided in this document are Tentative. All pump heads shall be as per final approved calculation during Detail design engineering.
4) Any hoist/EOT/chain pulley capacities mentioned in this document are minimum requirements, this does not limit contractor from providing higher capacities if required as per Detail design engineering

End of Part 11